

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 20 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 1 defines "**Computer software on a medium, for generating a mosaic image from a video sequence, the computer software comprising:**" embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-

statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed **"computer program, recorded on a medium"** can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1- are rejected under 35 U.S.C. 102(a) as being anticipated by U.S.

Patent 6,532,036 to Peleg et al.

With regard to claim 1, Peleg discloses ***a method for generating a mosaic image from a video sequence, the method comprising the steps of:***

receiving a video sequence, comprising a sequence of pictures, as a coded data stream respectively comprising at least picture information and motion information relating to the video sequence (column 4, lines 42-60);

selecting a motion model from a number of predetermined motion models which model motion-related differences between the sequence of pictures using motion information rather than picture information from the coded data stream (column 8, lines 18-34, Peleg teaches that affine motion is modeled for most simple motion modeling techniques such as zoom, forward motion and affine transformations, which are interpreted as predetermine motion models); ***and***

determining, for at least a subset of respective pictures in the sequence, a first estimate of a set of registration parameters relating to the selected motion model, such that the set of registration parameters for at least a subset of the respective pictures can be used to construct a mosaic image from the pictures (column 8, lines 49-67 and column 9, lines 1-24, Peleg discloses that the motion information is used to match portions of the consecutive images up and create a mosaic).

With regard to claim 2, Peleg discloses ***the method as claimed in claim 1, further comprising the step of determining, for each respective pair of pictures of at least a subset of the pictures, a set of provisional picture-pair registration parameters, using a subset of the motion information of the coded data stream***

(column 11, lines 1-58, Peleg discloses calculating the vector of optical flow or motion direction in order to determine how to join the adjacent images in registration).

With regard to claim 3, Peleg discloses ***the method as claimed in claim 2, further comprising the step of determining, for each respective pair of pictures of at least a subset of the pictures, at least one further set of provisional picture-pair registration parameters, using different subsets of the motion information of the coded data stream*** (column 11, lines 59-column 12, line 30, Peleg discloses that once the motion transformation is calculated, a family of lines that are perpendicular to the optical flow are determined. These lines are interpreted as a further set of provisional picture pair registration parameters as they determine where the image strips will be joined or registered).

With regard to claim 4, Peleg discloses ***the method as claimed in claim 3, further comprising the step of selecting from the sets of provisional picture-pair registration parameters, for each respective pair of pictures of at least a subset of the pictures, a set of provisional picture-pair registration parameters that is most consistent with at least a subset of the motion information associated with that pair of pictures*** (column 11, lines 59-column 12, line 30, Peleg discloses that the best option is chosen from the several calculated lines in order to generate the best results. This is interpreted as choosing the registration parameter that is most consistent with the motion information).

With regard to claim 5, Peleg discloses ***the method as claimed in claim 4, further comprising the step of identifying motion information that is not consistent with the selected set of provisional picture-pair registration parameters, so the identified inconsistent motion information can be ignored from further consideration in the step of determining the first estimate of the set of registration parameters*** (column 11, lines 59-column 12, line 30, Peleg discloses that the line closest to the center of the image is chosen because lines not close to the center will cause distortion and are not consistent with motion information).

With regard to claim 6, Peleg discloses ***the method as claimed in claim 5, further comprising the step of determining sets of picture-pair registration parameters that relate to registration of the respective pairs of pictures, for each respective pair of pictures for at least a subset of the picture pairs, based upon a selected subset of the motion information*** (column 11, lines 1-20, The image registration from one image to the next is performed using motion and is performed between each two images in a series of images).

With regard to claim 7, Peleg discloses ***the method as claimed in claim 6, further comprising the step of calculating, for each picture of at least a subset of the pictures, a first estimate of a set of registration parameters, which relates the respective picture to a mosaic coordinate system, based upon the sets of picture-***

pair registration parameters that relate to at least the respective picture (Figs. 6, 7A, 7B and 8 each disclose the coordinate system as it is developed for the mosaic image according to motion and how the images are registered with one another.

With regard to claim 8, Peleg discloses ***the method as claimed in claim 5, further comprising the step of selectively decoding selected parts of the coded data stream corresponding with portions of pictures, for use in determining a refined estimate of the picture-pair registration parameters*** (column 12, lines 40-60, Peleg disclose that points in the images are found to match and register the images).

With regard to claim 9, Peleg discloses ***the method as claimed in claim 8, further comprising the step of determining, for each respective pair of pictures for at least a subset of the picture pairs, a refined estimate of a set of picture-pair registration parameters of selected picture pairs, using at least (i) the corresponding first estimate of the set of registration parameters and (ii) the decoded picture information from selected portions of at least the corresponding pictures*** (column 11, lines 40-58, Peleg discloses using the parameters to determine an affine transformation and then recomputed the affine transformation in order to better match the partial images to one another).

With regard to claim 10, Peleg discloses ***the method as claimed in claim 7, further comprising the step of determining, for at least a subset of the pictures, a consistent set of registration parameters of selected picture pairs, by minimizing a measure of registration inconsistencies between at least a subset of the picture-pair registration parameters and the first estimate of a set of registration parameters of a least a subset of the pictures*** (column 11, lines 40-58, Peleg discloses using the parameters to determine a n affine transformation and then recomputed the affine transformation in order to better match the partial images to one another).

With regard to claim 11, Peleg discloses ***the method as claimed in claim 1, further comprising the step of using an intensity-matching procedure to reduce mismatches in intensity between the pictures when constructing the mosaic image*** (column 15, lines 45-55, Peleg discloses using color and intensity data to match the images).

With regard to claim 12, Peleg discloses ***the method as claimed in claim 11, wherein the step of using an intensity-matching procedure uses only the motion information and selected intensity components of the picture information*** (column 15, lines 45-55, Peleg discloses using color and intensity data to match the images).

With regard to claim 13, Peleg discloses ***the method as claimed in claim 1, further comprising the step of constructing a mosaic image from the pictures of the video sequence, using respective sets of registration parameters relating to at least a subset of pictures in the sequence*** (column 16, lines 1-10).

With regard to claim 14, Peleg discloses ***the method as claimed in claim 13, wherein the mosaic is constructed using the first estimate of registration parameters*** (column 16, lines 1-10).

With regard to claim 15, Peleg discloses ***the method as claimed in claim 13, wherein the mosaic is constructed using the refined estimate of registration parameters*** (column 16, lines 1-10).

With regard to claim 16, Peleg discloses ***the method as claimed in claim 12, wherein the mosaic is constructed using the consistent estimate of registration parameters*** (column 12, lines 34-60, Peleg discloses performing registration between strips).

With regard to claim 17, Peleg discloses ***the method as claimed in claim 12, wherein the mosaic is constructed using the results of an intensity correction procedure to reduce mismatches in intensity between the pictures of the sequence*** (column 15, lines 45-55, Peleg uses intensity information to find the best match between images).

With regard to claim 18, Peleg discloses ***the method as claimed in claim 1, wherein the motion information is presented in the form of motion vectors relating a block of pixels in one picture to a block of pixels in a second picture of the video sequence*** (column 11, lines 1-20).

With regard to claim 20, the discussion of claim 1 applies. Peleg discloses a computer program product for performing the method (column 18, lines 62-67).

With regard to claim 21, the discussion of claim 1 applies. Peleg discloses a system with means for performing each of the individual steps in Figure 4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 19 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patents 6,532,036 to Peleg et al. and 7,389,927 to Sezan et al.

With regard to claim 19, Peleg discloses the method as claimed in claim 1, and discloses the receiving coded video (column 4, lines 42-53), but does not explicitly disclose ***wherein the coded video sequence is coded in a manner compatible with an MPEG standard.*** MPEG video is exceedingly well known in the art and is a standard for digital video image coding format. Sezan teaches using MPEG video in creating a mosaic very similar to the present invention and also to the mosaic creation of Peleg (See Fig. 1 in Sezan). Therefore it would have been obvious to one of ordinary skill in the art to use MPEG video taught by Sezan as the video used in Peleg to create a mosaic image because MPEG is a standard digital video format.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WESLEY TUCKER whose telephone number is (571)272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Wes Tucker/
Examiner, Art Unit 2624